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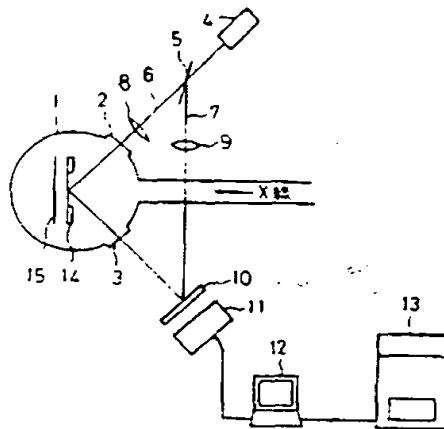
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TITLE : STRAIN MEASUREMENT OF X-RAY MASK



ABSTRACT : PURPOSE: To continuously measure the strain of a mask while X-rays are irradiated onto the mark by a method wherein a holographic image of the same mask at different time, while X-ray are being projected, is recorded by overlapping in a recording medium for waves of the same phase, and the interference fringe generated at the above- mentioned time is analyzed.

CONSTITUTION: The laser beam emitted from a laser beam source 4 is partially reflected by a beam splitter 5, the reflected light 7 is magnified by a lens 9 to a spot diameter which is sufficient for irradiation on the whole surface of the detection region of $B_{12}SiO_{20}$ crystal (BSO) 10, and it is made incident on the BSO 10. The light 6 transmitted through the splitter 5 is introduced into an X-ray irradiation chamber 1, made incident obliquely on an X-ray mask 14, and the reflection waves are made incident at right angles on the BSO 10. At this time, the interference fringe of the holographic image formed by the interference with a reference light is recorded on the BSO 10. When the second holographic image is subjected to fog exposure within the record maintaining time of the BSO crystal, the interference fringe of two holographic image are recorded. The design of the interference fringe appearing on the BSO is scanned by a vidicon 11, and power is outputted to a CRT 12. Also, numerical processing is conducted by a computer 13 to analyze the strain.

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